

# APPENDIX C

# GIS PROGRAMMING

## Introduction

The GISST program runs using ESRI's ArcInfo Workstation 7.2.1 or higher on a Windows NT 4.0 or Windows 2000 system. The program should also run on a UNIX workstation but has not been tested.

The GISST application can be run using either coordinates (latitude/longitude in degrees-minutes-seconds) or a polygon coverage. The program is started by typing the following at the ARC prompt: **&r criamain.aml <coord / cover>**. The **coord** argument is used when entering coordinates and the **cover** argument is used when running the program on a polygon coverage. CRIAMAIN.AML contains the ArcInfo command to create the 0.5, 2, or 4 mile buffers. THe user only needs to specify the distance within CRIAMAIN. Results from a GISST run are saved by writing the data to an INFO file called TRACKCRIA which is created in the current directory. If the INFO file does not exist then the file will be created. If the INFO file already exists in the current directory then the record will be appended to the bottom of the file.

The following Arc Macro Language (AML) are used to calculate the various criteria in GISST:

CRIAQUI.AML	area over a sole source aquifer (1 or 5)
CRIACENSUS.AML	calculates socioeconomic data
CRIACLIP.AML	extracts data from library for water, road, and flood criteria
CRIADELETE.AML	deletes temporary files created during run
CRIADISTANCE.AML	calculates distance to surface water
CRIAENVIRO.AML	calculates number of facilities in area
CRIAFLOOD.AML	calculates percent of area in flood plain
CRIALANDUSE.AML	calculates land use criteria (percent wildlife, land cover quality, etc.)
CRIALOADTRACKER.AML	loads results of GISST run into tracking file

CRIAMAIN.AML	Main aml - starts all others
CRIARDS.AML	calculates road density
CRIASTATSGO.AML	calculates the soil criteria (permeability, groundwater probability)
CRIATRI.AML	calculates criteria associated with Toxic Release Inventory
CRIAWATERSHED.AML	identifies watershed (8-digit HUC) study area is in and assigns watershed criteria
CRIAWTRCHAN.AML	calculates density of channels/canals
CRIAWTRQUAN.AML	calculates density of streams/rivers
CRIAWTRSURFA.AML	calculates percent of area that is surface water.

## **AMLS**

### **CRIAAQUI.AML**

<<Remove title before running in GIS>>

```
ap
coo keyboard
mape sitebuff4
res \\r6gisnt1\share1\common\aquifer\ssaqifers polys one %.x% %.y%
&s .ssaqu = [before [show select \\r6gisnt1\share1\common\aquifer\ssaqifers polys] ,]
&if %.ssaqu% = 0 &then
  &s .ssaqu = 1
&else
  &s .ssaqu = 5
q
&return
```

### **CRIACENSUS.AML**

<<Remove title before running in GIS>>

```
ap
mape sitebuff4
create sitemape mape
q
build sitemape polys

/**extract data from the .cengeo layer.
&s xnum = 1
&do &until %xnum% > %.statenum%
  &if %xnum% = 1 &then
    &s libval %.st1%
  &else
    &if %xnum% = 2 &then
      &s libval %.st2%
    &else
      &if %xnum% = 3 &then
        &s libval %.st3%
      &else
        &s libval %.st4%
```

```

librarian %libval%
setcover sitemape
setlayers names cengeo
setoutputname cengeo sitemepop_%xnum%
extract topological # clip
q
external sitemepop_%xnum%
&s xnum = %xnum% + 1
&end

&if %.statenum% = 1 &then
  rename sitemepop_1 sitemepop
&else
  &if %.statenum% = 2 &then
    &do
      append sitemepop polys all
      sitemepop_1
      sitemepop_2
      end
      clean sitemepop polys #
    &end
  &else
    &if %.statenum% = 3 &then
      &do
        append sitemepop polys all
        sitemepop_1
        sitemepop_2
        sitemepop_3
        end
        clean sitemepop polys #
      &end
    &else
      &if %.statenum% = 4 &then
        &do
          append sitemepop polys all
          sitemepop_1
          sitemepop_2
          sitemepop_3
          sitemepop_4
          end
          clean sitemepop polys #
        &end
      &else
    &endif
  &endif
&endif

```

```

&end

clip sitemepop sitebuff4 site4pop poly
build site4pop polys
&data arc info
ARC
SEL SITEMEPOP.PAT
ALTER CTBNA,,,C,,,
REDEFINE
19
CENSUSID
13
13
C
~
Q STOP
&end
dissolve sitemepop sitepopds censusid poly
build sitepopds polys

```

```

additem site4pop.patpop site4pop.patpop areasqft 4 12 f 3
additem site4pop.patpop site4pop.patpop areasqmi 4 12 f 6
additem site4pop.patpop site4pop.patpop arearatio 4 12 f 6
additem site4pop.patpop site4pop.patpop poprate 4 12 f 6
additem site4pop.patpop site4pop.patpop newpoptmp 4 12 f 2
additem site4pop.patpop site4pop.patpop newpop 9 9 i
additem site4pop.patpop site4pop.patpop whitenh 4 12 f 2
additem site4pop.patpop site4pop.patpop minority 9 9 i
additem site4pop.patpop site4pop.patpop mintmp 4 12 f 2
additem site4pop.patpop site4pop.patpop mave 4 12 f 6
additem site4pop.patpop site4pop.patpop pave 4 12 f 6
additem site4pop.patpop site4pop.patpop blckpop 4 12 f 6
additem site4pop.patpop site4pop.patpop housetmp 4 12 f 6
additem site4pop.patpop site4pop.patpop households 9 9 i
additem site4pop.patpop site4pop.patpop poortmp 4 12 f 6
additem site4pop.patpop site4pop.patpop poor 9 9 i
additem site4pop.patpop site4pop.patpop babestmp 4 12 f 6
additem site4pop.patpop site4pop.patpop babes 9 9 i
additem site4pop.patpop site4pop.patpop pop25 9 9 i
additem site4pop.patpop site4pop.patpop pop25tmp 4 12 f 6
additem site4pop.patpop site4pop.patpop pop16 9 9 i

```

```
additem site4pop.patpop site4pop.patpop pop16tmp 4 12 f 6
additem site4pop.patpop site4pop.patpop pop5 9 9 i
additem site4pop.patpop site4pop.patpop pop5tmp 4 12 f 6
additem site4pop.patpop site4pop.patpop nohsdeg 9 9 i
additem site4pop.patpop site4pop.patpop nohsdegtmp 4 12 f 6
additem site4pop.patpop site4pop.patpop edusc 4 12 f 6
additem site4pop.patpop site4pop.patpop edusctmp 4 12 f 6
additem site4pop.patpop site4pop.patpop kids 9 9 i
additem site4pop.patpop site4pop.patpop kidstmp 4 12 f 6
additem site4pop.patpop site4pop.patpop older 9 9 i
additem site4pop.patpop site4pop.patpop oldertmp 4 12 f 6
additem site4pop.patpop site4pop.patpop unemploy 9 9 i
additem site4pop.patpop site4pop.patpop unemploytmp 4 12 f 6
additem site4pop.patpop site4pop.patpop engabil 9 9 i
additem site4pop.patpop site4pop.patpop engabiltmp 4 12 f 6
additem site4pop.patpop site4pop.patpop lingiso 9 9 i
additem site4pop.patpop site4pop.patpop lingisotmp 4 12 f 6
additem site4pop.patpop site4pop.patpop forborn 9 9 i
additem site4pop.patpop site4pop.patpop forborntmp 4 12 f 6
additem site4pop.patpop site4pop.patpop hseage 4 12 f 6
additem site4pop.patpop site4pop.patpop hseagetmp 4 12 f 6
```

```
&data arc info
ARC
SEL SITE4POP.PATPOP
REDEFINE
17
BLCKGR-ID
10
10
I
~
Q STOP
&end
```

```
relate add
blkpop
\\r6gisnt1\share1\%.st%\census\pl9417%.st%
info
censusid
censusid
```

```

ordered
ro
bgpop
%.progpath%%.st%stfl
info
blkgr-id
blkgr-id
ordered
ro
~

ap
&do rad &list 4 2
&if %rad% = 4 &then &s .pop2go go
&if %.pop2go% = go &then
&do
&s study %rad%
mape site%rad%pop
res sitepopds polys mape
res sitepopds polys overlap sitebuff%rad% polys # within
&s tempsel [before [show select sitepopds polys] ,]
&if %tempsel% gt 0 &then
  &do
    infofile sitepopds polys ids.file censusid init
    res site%rad%pop region.pop keyfile ids.file censusid
    calculate site%rad%pop region.pop areasqft = ( area1 * 27878400 )
    nsel site%rad%pop region.pop
  &end
~
calculate site%rad%pop region.pop areasqft = area
clearsel
res site%rad%pop region.pop pop100 > 0
calculate site%rad%pop region.pop newpoptmp = ( 0.00000003587 * areasqft ) * popdens
calculate site%rad%pop region.pop newpop = newpoptmp
calculate site%rad%pop region.pop newpoptmp = newpoptmp - newpop
res site%rad%pop region.pop newpoptmp > .5
calculate site%rad%pop region.pop newpop = newpop + 1
clearsel
res site%rad%pop region.pop pop100 < newpop
calculate site%rad%pop region.pop newpop = pop100
clearsel

```

```

res site%rad%pop region.pop pop100 > 0
calculate site%rad%pop region.pop poprate = newpop / pop100
calculate site%rad%pop region.pop whitenh = blkpop//p004_0002
calculate site%rad%pop region.pop mintmp = pop100 - whitenh
calculate site%rad%pop region.pop mave = mintmp / pop100
calculate site%rad%pop region.pop mintmp = mave * newpop
calculate site%rad%pop region.pop minority = mintmp
calculate site%rad%pop region.pop mintmp = mintmp - minority
res site%rad%pop region.pop mintmp > .5
calculate site%rad%pop region.pop minority = minority + 1

```

```

clearsel
res site%rad%pop region.pop newpop > 0
calculate site%rad%pop region.pop blkpop = bgpop//totpop
calculate site%rad%pop region.pop housetmp = bgpop//households
calculate site%rad%pop region.pop babestmp = bgpop//tot-kids<1
calculate site%rad%pop region.pop poortmp = bgpop//houincu15
calculate site%rad%pop region.pop pop25tmp = bgpop//pop_25
calculate site%rad%pop region.pop pop16tmp = bgpop//pop>16
calculate site%rad%pop region.pop pop5tmp = bgpop//pop>5
calculate site%rad%pop region.pop nohsdegtmp = bgpop//nohsdeg
calculate site%rad%pop region.pop kidstmp = bgpop//kids0-6
calculate site%rad%pop region.pop oldertmp = bgpop//per55&over
calculate site%rad%pop region.pop unemploytmp = bgpop//unemploy
calculate site%rad%pop region.pop engabiltmp = bgpop//engabil
calculate site%rad%pop region.pop lingisotmp = bgpop//lingiso
calculate site%rad%pop region.pop forborntmp = bgpop//forborn
clearsel
calculate site%rad%pop region.pop edusctmp = bgpop//eduscore
calculate site%rad%pop region.pop hseagetmp = bgpop//hseagesc

```

```

res site%rad%pop region.pop blkpop > 0
res site%rad%pop region.pop households = 0
calculate site%rad%pop region.pop households = 1
clearsel
res site%rad%pop region.pop newpop = 0
calculate site%rad%pop region.pop households = 0
clearsel
res site%rad%pop region.pop newpop > 0
res site%rad%pop region.pop blkpop > 0
calculate site%rad%pop region.pop pave = newpop / blkpop

```

```

calculate site%rad%pop region.pop housetmp = housetmp * pave
calculate site%rad%pop region.pop households = housetmp
calculate site%rad%pop region.pop housetmp = housetmp - households
res site%rad%pop region.pop housetmp > .5
calculate site%rad%pop region.pop households = households + 1
clearsel

&if %rad% = 4 &then
  &s areabuff = %.area4mi%
&else
  &s areabuff = %.area2mi%

calculate site%rad%pop region.pop arearatio = ( areasqft * 0.00000003587006 ) / %areabuff%
res site%rad%pop region.pop wid ne 99
calculate site%rad%pop region.pop edusc = edusctmp * arearatio
calculate site%rad%pop region.pop hseage = hseagetmp * arearatio
clearsel

&do type &list pop5 pop16 pop25 babes poor nohsdeg kids older unemploy engabil lingiso forborn
res site%rad%pop region.pop newpop = 0
calculate site%rad%pop region.pop %type% = 0
clearsel
res site%rad%pop region.pop newpop > 0
res site%rad%pop region.pop blckpop > 0
calculate site%rad%pop region.pop %type%tmp = %type%tmp * pave
calculate site%rad%pop region.pop %type% = %type%tmp
calculate site%rad%pop region.pop %type%tmp = %type%tmp - %type%
res site%rad%pop region.pop %type%tmp > .5
calculate site%rad%pop region.pop %type% = %type% + 1
clearsel
&end

statistics site%rad%pop region.pop # blckgrid
sum newpop
sum minority
sum households
sum pop5
sum pop16
sum pop25
sum babes

```

```

sum poor
sum nohsdeg
sum kids
sum older
sum unemploy
sum engabil
sum lingiso
sum forborn
sum edusc
sum hseage
~

n
n
~

&s newpop [show select blckgrid info 1 item sum-newpop]
&s sminority [show select blckgrid info 1 item sum-minority]
&s households [show select blckgrid info 1 item sum-households]
&s pop5 [show select blckgrid info 1 item sum-pop5]
&s pop16 [show select blckgrid info 1 item sum-pop16]
&s pop25 [show select blckgrid info 1 item sum-pop25]
&s sbabes [show select blckgrid info 1 item sum-babes]
&s spoor [show select blckgrid info 1 item sum-poor]
&s snohsdeg [show select blckgrid info 1 item sum-nohsdeg]
&s skids [show select blckgrid info 1 item sum-kids]
&s solder [show select blckgrid info 1 item sum-older]
&s sunemploy [show select blckgrid info 1 item sum-unemploy]
&s sengabil [show select blckgrid info 1 item sum-engabil]
&s slingiso [show select blckgrid info 1 item sum-lingiso]
&s sforborn [show select blckgrid info 1 item sum-forborn]
&s edusc [show select blckgrid info 1 item sum-edusc]
&s hseage [show select blckgrid info 1 item sum-hseage]

&if %newpop% > 0 &then
&do
  &s minority [calc %sminority% / %newpop%]
  &s babes [calc %sbabes% / %newpop%]
  &s kids [calc %skids% / %newpop%]
  &s older [calc %solder% / %newpop%]
  &s forborn [calc %sforborn% / %newpop%]
  &if %households% > 0 &then

```

```

&do
  &s poor [calc %spoor% / %households%]
  &s lingiso [calc %slingiso% / %households%]
&end
&else
  &do
    &s poor 0
    &s lingiso 0
  &end
  &if %pop25% > 0 &then
    &s nohsdeg [calc %snohsdeg% / %pop25%]
  &else
    &s nohsdeg 0
  &if %pop16% > 0 &then
    &s unemploy [calc %sunemploy% / %pop16%]
  &else
    &s unemploy 0
  &if %pop5% > 0 &then
    &s engabil [calc %sengabil% / %pop5%]
  &else
    &s engabil 0
  &end
  &else
    &do
      &s minority 0
      &s babes 0
      &s poor 0
      &s nohsdeg 0
      &s kids 0
      &s older 0
      &s unemploy 0
      &s engabil 0
      &s lingiso 0
      &s forborn 0
    &end
  &if %study% = 4 &then
    &s cliparea = %.area4mi%
  &else
    &s cliparea = %.area2mi%

```

```

&s .popdens%rad% [calc %newpop% / %cliparea%]
&s popd [calc %newpop% / %cliparea%]
&if %popd% <= 200 &then
  &s .popdens%rad%sc 1
&else
  &if %popd% > 200 and %popd% <= 1000 &then
    &s .popdens%rad%sc 2
  &else
    &if %popd% > 1000 and %popd% <= 5000 &then
      &s .popdens%rad%sc 3
    &else
      &s .popdens%rad%sc 4

&select %.st%
&when AR
&do
  &s nohsdegav .337
  &s minorityav .178
  &s poorav .360
  &s kidsav .099
  &s olderav .239
  &s babesav .012
  &s unemployav .040
  &s engabilav .004
  &s lingisoav .005
  &s forbornav .011
&end
&when LA
&do
  &s nohsdegav .317
  &s minorityav .342
  &s poorav .363
  &s kidsav .114
  &s olderav .191
  &s babesav .014
  &s unemployav .056
  &s engabilav .010
  &s lingisoav .022
  &s forbornav .021
&end
&when NM

```

```
&do
  &s nohsdegav .249
  &s minorityav .496
  &s poorav .310
  &s kidsav .117
  &s olderav .187
  &s babesav .014
  &s unemployav .049
  &s engabilav .034
  &s lingisoav .065
  &s forbornav .053
&end
&when OK
&do
  &s nohsdegav .254
  &s minorityav .190
  &s poorav .320
  &s kidsav .101
  &s olderav .223
  &s babesav .012
  &s unemployav .042
  &s engabilav .007
  &s lingisoav .009
  &s forbornav .021
&end
&when TX
&do
  &s nohsdegav .279
  &s minorityav .394
  &s poorav .276
  &s kidsav .114
  &s olderav .176
  &s babesav .014
  &s unemployav .046
  &s engabilav .052
  &s lingisoav .058
  &s forbornav .090
&end
&otherwise
&do
  &s nohsdegav 0
```

```

&s minorityav 0
&s poorav 0
&s kidsav 0
&s olderav 0
&s babesav 0
&s unemployav 0
&s engabilav 0
&s lingisoav 0
&s forbornav 0
&end
&end

&do type &list nohsdeg minority poor kids older babes unemploy engabil lingiso forborn
&if %type% = nohsdeg &then
  &do
    &s one = %nohsdegav%
    &s per = %nohsdeg%
  &end
&if %type% = minority &then
  &do
    &s one = %minorityav%
    &s per = %minority%
  &end
&if %type% = poor &then
  &do
    &s one = %poorav%
    &s per = %poor%
  &end
&if %type% = kids &then
  &do
    &s one = %kidsav%
    &s per = %kids%
  &end
&if %type% = older &then
  &do
    &s one = %olderav%
    &s per = %kids%
  &end
&if %type% = babes &then
  &do
    &s one = %babesav%

```

```

&s per = %babes%
&end
&if %type% = unemploy &then
  &do
    &s one = %unemployav%
    &s per = %unemploy%
  &end
&if %type% = engabil &then
  &do
    &s one = %engabilav%
    &s per = %engabil%
  &end
&if %type% = lingiso &then
  &do
    &s one = %lingisoav%
    &s per = %lingiso%
  &end
&if %type% = forborn &then
  &do
    &s one = %forbornav%
    &s per = %forborn%
  &end

&s two = 1.33 * %one%
&s three = 1.66 * %one%
&s four = 2 * %one%
&if %per% <= %one% &then
  &s .%type%%rad%sc = 1
&else
  &if %per% > %one% and %per% <= %two% &then
    &s .%type%%rad%sc = 2
  &else
    &if %per% > %two% and %per% <= %three% &then
      &s .%type%%rad%sc = 3
    &else
      &if %per% > %three% and %per% <= %four% &then
        &s .%type%%rad%sc = 4
      &else
        &s .%type%%rad%sc = 5
  &end

```

```

&if %newpop% > 0 &then
  &do
    &s .newpop%rad% %newpop%
    &s .minority%rad% [calc %sminority% / %newpop%]
    &s .babes%rad% [calc %sbabes% / %newpop%]
    &s .kids%rad% [calc %skids% / %newpop%]
    &s .older%rad% [calc %solder% / %newpop%]
    &s .forborn%rad% [calc %sforborn% / %newpop%]
    &s .edusc%rad% %edusc%
    &s .hseage%rad% %hseage%
    &if %households% > 0 &then
      &do
        &s .poor%rad% [calc %spoor% / %households%]
        &s .lingiso%rad% [calc %slingiso% / %households%]
      &end
    &else
      &do
        &s .poor%rad% 0
        &s .lingiso%rad% 0
      &end
    &if %pop25% > 0 &then
      &s .nohsdeg%rad% [calc %snohsdeg% / %pop25%]
    &else
      &s .nohsdeg%rad% 0
    &if %pop16% > 0 &then
      &s .unemploy%rad% [calc %sunemploy% / %pop16%]
    &else
      &s .unemploy%rad% 0
    &if %pop5% > 0 &then
      &s .engabil%rad% [calc %sengabil% / %pop5%]
    &else
      &s .engabil%rad% 0
    &end
  &else
    &do
      &s .newpop%rad% 0
      &s .minority%rad% 0
      &s .babes%rad% 0
      &s .poor%rad% 0
      &s .nohsdeg%rad% 0
      &s .kids%rad% 0

```

```

&s .older%rad% 0
&s .unemploy%rad% 0
&s .engabil%rad% 0
&s .lingiso%rad% 0
&s .forborn%rad% 0
&s .edusc%rad% 0
&s .hseage%rad% 0
&end

&if %study% = 4 &then
  &do
    &if %newpop% > 0 &then
      &do
        arc clip site4pop sitebuff2 site2pop poly
        &s .pop2go go
      &end
    &else
      &do
        &s .pop2go no
        &s .newpop2 0
        &s .minority2 0
        &s .babes2 0
        &s .poor2 0
        &s .nohsdeg2 0
        &s .kids2 0
        &s .older2 0
        &s .unemploy2 0
        &s .engabil2 0
        &s .lingiso2 0
        &s .forborn2 0
        &s .edusc2 0
        &s .hseage2 0
        &s .minority2sc 1
        &s .babes2sc 1
        &s .poor2sc 1
        &s .nohsdeg2sc 1
        &s .kids2sc 1
        &s .older2sc 1
        &s .unemploy2sc 1
        &s .engabil2sc 1
        &s .lingiso2sc 1

```

```

&s .forborn2sc 1
&s .popdens2 0
&s .popdens2sc 0
&end
&end

&if [exists blkgrid -info] &then
  &s erase [delete blkgrid -info]
&end
&end

q
&return

```

**CRIACLIP.AML**  
 <<Remove title before running in GIS>>

```
&sys copy %progpath%\files\prj.adf sitebuff4\prj.adf
```

```

/**extract data from the .cengeo layer.
&s xnum = 1
&do &until %xnum% > %.statenum%
  &if %xnum% = 1 &then
    &s libval %.st1%
  &else
    &if %xnum% = 2 &then
      &s libval %.st2%
    &else
      &if %xnum% = 3 &then
        &s libval %.st3%
      &else
        &s libval %.st4%

```

```

librarian %libval%
setcover sitebuff4
setlayers names cengeo
setoutputname cengeo sitewtpy4_%xnum%
extract topological # clip

```

```
setlayers names a
```

```

setoutputname a siterd4_%xnum%
extract topological # clip

setlayers names h
setoutputname h sitewtar4_%xnum%
extract topological # clip

&if %.flooddata% = .TRUE. &then
  &do
    setlayers names flood
    setoutputname flood siteflood4_%xnum%
    extract topological # clip
  &end

q

external sitewtpy4_%xnum%
external siterd4_%xnum%
external sitewtar4_%xnum%
&if [exists siteflood4_%xnum% -cover] &then
  external siteflood4_%xnum%

/* build sitewtpy4_%xnum% polys
clean sitewtpy4_%xnum% # .0000000000000001 .0000000000000001
build siterd4_%xnum% arcs
build sitewtar4_%xnum% arcs
&if [exists siteflood4_%xnum% -cover] &then
  clean siteflood4_%xnum% # .0000000000000001 .0000000000000001
/* build siteflood4_%xnum% polys

&s xnum = %xnum% + 1

&end

&if %.statenum% = 1 &then
  &do
    rename sitewtpy4_1 sitewtpy4
    rename siterd4_1 siterd4
    rename sitewtar4_1 sitewtar4
    &if [exists siteflood4_1 -cover] &then
      rename siteflood4_1 siteflood4

```

```

&end
&if %statenum% = 2 &then
  &do
    append sitewtpy4 polys all
    sitewtpy4_1
    sitewtpy4_2
    end
    clean sitewtpy4 # .0000000001 .000000000001
    append siterd4 arcs all
    siterd4_1
    siterd4_2
    end
    build siterd4 arcs
    append sitewtar4 arcs all
    sitewtar4_1
    sitewtar4_2
    end
    build sitewtar4 arcs

  &if [exists siteflood4_%1 -cover] &then
    &do
      append siteflood4 polys all
      siteflood4_1
      siteflood2_1
      end
      clean siteflood4 # .0000000001 .000000000001
    &end
  &end
  &if %statenum% = 3 &then
    &do
      append sitewtpy4 polys all
      sitewtpy4_1
      sitewtpy4_2
      sitewtpy4_3
      end
      clean sitewtpy4 # .0000000001 .000000000001
      append siterd4 arcs all
      siterd4_1
      siterd4_2
      siterd4_3
      end

```

```

build siterd4 arcs
append sitewtar4 arcs all
sitewtar4_1
sitewtar4_2
sitewtar4_3
end
build sitewtar4 arcs

&if [exists siteflood4_1 -cover] &then
&do
  append siteflood4 polys all
  siteflood4_1
  siteflood4_2
  siteflood4_3
  end
  clean siteflood4 # .0000000001 .00000000001
&end
&end
&if %statenum% = 4 &then
&do
  append sitewtpy4 polys all
  sitewtpy4_1
  sitewtpy4_2
  sitewtpy4_3
  sitewtpy4_4
  end
  clean sitewtpy4 # .0000000001 .00000000001
  append siterd4 arcs all
  siterd4_1
  siterd4_2
  siterd4_3
  siterd4_4
  end
  build siterd4 arcs
  append sitewtar4 arcs all
  sitewtar4_1
  sitewtar4_2
  sitewtar4_3
  sitewtar4_4
  end
  build sitewtar4 arcs

```

```

&if [exists siteflood4_1 -cover] &then
&do
  append siteflood4 polys all
  siteflood4_1
  siteflood4_2
  siteflood4_3
  siteflood4_4
  end
  clean siteflood4 # .00000000001 .000000000001
&end
&end

clip sitewtpy4 sitebuff2 sitewtpy2 poly
clip siterd4 sitebuff2 siterd2 line
clip sitewtar4 sitebuff2 sitewtar2 line
&if [exists siteflood4 -cover] &then
  clip siteflood4 sitebuff2 siteflood2 poly

/*build sitewtpy2 polys
clean sitewtpy2 # .000000000000001 .00000000000001
build siterd2 arcs
build sitewtar2 arcs
&if [exists siteflood2 -cover] &then
  clean siteflood2 # .000000000000001 .000000000000001
/* build siteflood2 polys

&s xnum = 1
&do &until %xnum% > %.statenum%
  &if %xnum% = 1 &then &s state = %.st1%
  &if %xnum% = 2 &then &s state = %.st2%
  &if %xnum% = 3 &then &s state = %.st3%
  &if %xnum% = 4 &then &s state = %.st4%
  clip \\r6gisnt1\share1%state%\soils\statsgo sitebuff4 stats4_%xnum% poly
  &s xnum = %xnum% + 1
&end

&if %.statenum% = 1 &then
  rename stats4_1 stats4
&else
  &if %.statenum% = 2 &then
    &do

```

```

append stats4 polys all
stats4_1
stats4_2
end
clean stats4 # .00000000001 .00000000001
&end
&celse
&if %.statenum% = 3 &then
&do
append stats4 polys all
stats4_1
stats4_2
stats4_3
end
clean stats4 # .00000000001 .00000000001
&end
&else
&if %.statenum% = 4 &then
&do
append stats4 polys all
stats4_1
stats4_2
stats4_3
stats4_4
end
clean stats4 # .00000000001 .00000000001
&end

```

```

clip stats4 sitebuff2 stats2 poly
/*build stats2 polys
clean stats2 # .000000000001 .0000000000001

&return

```

### **CRIADELETE.AML**

<<Remove title before running in GIS>>

```

&if [exists sitebuff2 -cover] &then kill sitebuff2 all
&if [exists sitebuff4 -cover] &then kill sitebuff4 all

```

```

&if [exists stats2 -cover] &then kill stats2 all
&if [exists stats4 -cover] &then kill stats4 all
&if [exists stats4_1 -cover] &then kill stats4_1 all
&if [exists stats4_2 -cover] &then kill stats4_2 all
&if [exists stats4_3 -cover] &then kill stats4_3 all
&if [exists stats4_4 -cover] &then kill stats4_4 all
&if [exists sitept -cover] &then kill sitept all
&if [exists siterd2 -cover] &then kill siterd2 all
&if [exists siterd4 -cover] &then kill siterd4 all
&if [exists siterd4_1 -cover] &then kill siterd4_1 all
&if [exists siterd4_2 -cover] &then kill siterd4_2 all
&if [exists siterd4_3 -cover] &then kill siterd4_3 all
&if [exists siterd4_4 -cover] &then kill siterd4_4 all
&if [exists site2bna -cover] &then kill site2bna all
&if [exists site4bna -cover] &then kill site4bna all
&if [exists sitewtpy2 -cover] &then kill sitewtpy2 all
&if [exists sitewtpy4 -cover] &then kill sitewtpy4 all
&if [exists sitewtpy4_1 -cover] &then kill sitewtpy4_1 all
&if [exists sitewtpy4_2 -cover] &then kill sitewtpy4_2 all
&if [exists sitewtpy4_3 -cover] &then kill sitewtpy4_3 all
&if [exists sitewtpy4_4 -cover] &then kill sitewtpy4_4 all
&if [exists sitewtar2 -cover] &then kill sitewtar2 all
&if [exists sitewtar4 -cover] &then kill sitewtar4 all
&if [exists sitewtar4_1 -cover] &then kill sitewtar4_1 all
&if [exists sitewtar4_2 -cover] &then kill sitewtar4_2 all
&if [exists sitewtar4_3 -cover] &then kill sitewtar4_3 all
&if [exists sitewtar4_4 -cover] &then kill sitewtar4_4 all
&if [exists siteflood2 -cover] &then kill siteflood2 all
&if [exists siteflood4 -cover] &then kill siteflood4 all
&if [exists siteflood4_1 -cover] &then kill siteflood4_1 all
&if [exists siteflood4_2 -cover] &then kill siteflood4_2 all
&if [exists siteflood4_3 -cover] &then kill siteflood4_3 all
&if [exists siteflood4_4 -cover] &then kill siteflood4_4 all
&if [exists sitelumape -cover] &then kill sitelumape all
&if [exists sitelumed -cover] &then kill sitelumed all
&if [exists site4lud -cover] &then kill site4lud all
&if [exists site2lud -cover] &then kill site2lud all
&if [exists site4lu -cover] &then kill site4lu all
&if [exists site2lu -cover] &then kill site2lu all
&if [exists sitemape -cover] &then kill sitemape all
&if [exists site4pop -cover] &then kill site4pop all

```

```

&if [exists site2pop -cover] &then kill site2pop all
&if [exists sitemepop -cover] &then kill sitemepop all
&if [exists sitepopds -cover] &then kill sitepopds all
&if [exists site4clgr -grid] &then kill site4clgr all
&if [exists soil4statsarea -info] &then &s erase [delete soil4statsarea -info]
&if [exists soil2statsarea -info] &then &s erase [delete soil2statsarea -info]
&if [exists soil4stats -info] &then &s erase [delete soil4stats -info]
&if [exists soil2stats -info] &then &s erase [delete soil2stats -info]
&if [exists wtpy2stat -info] &then &s erase [delete wtpy2stat -info]
&if [exists wtpy4stat -info] &then &s erase [delete wtpy4stat -info]
&if [exists wtarch4stat -info] &then &s erase [delete wtarch4stat -info]
&if [exists wtarch2stat -info] &then &s erase [delete wtarch2stat -info]
&if [exists wtar2stat -info] &then &s erase [delete wtar2stat -info]
&if [exists wtar4stat -info] &then &s erase [delete wtar4stat -info]
&if [exists rd4stat -info] &then &s erase [delete rd4stat -info]
&if [exists rd2stat -info] &then &s erase [delete rd2stat -info]
&if [exists site4lustat -info] &then &s erase [delete site4lustat -info]
&if [exists site2lustat -info] &then &s erase [delete site2lustat -info]
&if [exists site4ludstat -info] &then &s erase [delete site4ludstat -info]
&if [exists site2ludstat -info] &then &s erase [delete site2ludstat -info]
&if [exists site4agstat -info] &then &s erase [delete site4agstat -info]
&if [exists site2agstat -info] &then &s erase [delete site2agstat -info]
&if [exists site4wetstat -info] &then &s erase [delete site4wetstat -info]
&if [exists site2wetstat -info] &then &s erase [delete site2wetstat -info]
&if [exists fld1004stat -info] &then &s erase [delete fld1004stat -info]
&if [exists fld1002stat -info] &then &s erase [delete fld1002stat -info]
&if [exists fld5004stat -info] &then &s erase [delete fld5004stat -info]
&if [exists fld5002stat -info] &then &s erase [delete fld5002stat -info]
&if [exists ids.file -info] &then &s erase [delete ids.file -info]
&if [exists blckgrid -info] &then &s erase [delete blckgrid -info]
&if [exists tristat -info] &then &s erase [delete tristat -info]

```

### CRIADISTANCE.AML

<<Remove title before running in GIS>>

```

ap
mape sitebuff4
res sitewtar4 arcs circle %.x% %.y% 300
&s .dswft = [before [show select sitewtar4 arcs] ,]
&if %.dswft% = 0 &then

```

```

&do
  clearsel
  res sitewtar4 arcs circle %.x% %.y% 900
  &s .dswft = [before [show select sitewtar4 arcs] ,]
  &if %.dswft% = 0 &then
    &do
      clearsel
      res sitewtar4 arcs circle %.x% %.y% 2700
      &s .dswft = [before [show select sitewtar4 arcs] ,]
      &if %.dswft% = 0 &then
        &do
          clearsel
          res sitewtar4 arcs circle %.x% %.y% 8100
          &s .dswft = [before [show select sitewtar4 arcs] ,]
          &if %.dswft% = 0 &then
            &s .dswsc 1
          &else
            &s .dswsc 2
          &end
        &else
          &s .dswsc 3
        &end
      &else
        &s .dswsc 4
      &end
    &else
      &s .dswsc 5
    q
  &return

```

### CRIAENVIRO.AML

<<Remove title before running in GIS>>

```

ap
mape sitebuff4
res %.progpath%r6ef99 points mape
res %.progpath%r6ef99 points overlap sitebuff4 polys
&s .othersite4 = [before [show select %.progpath%r6ef99 points] ,]
&if %.othersite4% = 0 &then
  &s .othfac4 1

```

```

&else
&if %.othersite4% = 1 &then
  &s .othfac4 2
&else
  &if %.othersite4% = 2 &then
    &s .othfac4 3
  &else
    &if %.othersite4% = 3 &then
      &s .othfac4 4
    &else
      &s .othfac4 5
clearsel
res %.progpath%r6ef99 points mape
res %.progpath%r6ef99 points overlap sitebuff2 polys
&s .othersite2 = [before [show select %.progpath%r6ef99 points],]
&if %.othersite2% = 0 &then
  &s .othfac2 1
&else
  &if %.othersite2% = 1 &then
    &s .othfac2 2
  &else
    &if %.othersite2% = 2 &then
      &s .othfac2 3
    &else
      &if %.othersite2% = 3 &then
        &s .othfac2 4
      &else
        &s .othfac2 5
q
&return

```

### **CRIAFLOOD.AML**

<<Remove title before running in GIS>>

```

&if %.flooddata% = .TRUE. &then
  &do
    ap
    /*****100 year flood
    res siteflood4 polys zone = 'A'
    statistics siteflood4 polys # fld1004stat

```

```

sum area
end
&s fld1004area [show select fld1004stat info 1 item sum-area]
&s .fld1004 [calc [calc [calc %fld1004area% * 0.00000003587006] / %.area4mi%] * 100]
&if %.fld1004% lt 20 &then
  &s .fld1004sc 1
&else
  &if %.fld1004% ge 20 and %.fld1004% lt 30 &then
    &s .fld1004sc 2
  &else
    &if %.fld1004% ge 30 and %.fld1004% lt 40 &then
      &s .fld1004sc 3
    &else
      &if %.fld1004% ge 40 and %.fld1004% lt 50 &then
        &s .fld1004sc 4
      &else
        &s .fld1004sc 5

res siteflood2 polys zone = 'A'
statistics siteflood2 polys # fld1002stat
sum area
end
&s fld1002area [show select fld1002stat info 1 item sum-area]
&s .fld1002 [calc [calc [calc %fld1002area% * 0.00000003587006] / %.area2mi%] * 100]
&if %.fld1002% lt 20 &then
  &s .fld1002sc 1
&else
  &if %.fld1002% ge 20 and %.fld1002% lt 30 &then
    &s .fld1002sc 2
  &else
    &if %.fld1002% ge 30 and %.fld1002% lt 40 &then
      &s .fld1002sc 3
    &else
      &if %.fld1002% ge 40 and %.fld1002% lt 50 &then
        &s .fld1002sc 4
      &else
        &s .fld1002sc 5

*****500 year flood
clearsel
res siteflood4 polys zone = 'A' or zone = 'X500'

```

```

statistics siteflood4 polys # fld5004stat
sum area
end
&s fld5004area [show select fld5004stat info 1 item sum-area]
&s .fld5004 [calc [calc [calc %fld5004area% * 0.00000003587006] / %.area4mi%] * 100]
&if %.fld5004% lt 20 &then
  &s .fld5004sc 1
&else
  &if %.fld5004% ge 20 and %.fld5004% lt 30 &then
    &s .fld5004sc 2
  &else
    &if %.fld5004% ge 30 and %.fld5004% lt 40 &then
      &s .fld5004sc 3
    &else
      &if %.fld5004% ge 40 and %.fld5004% lt 50 &then
        &s .fld5004sc 4
      &else
        &s .fld5004sc 5

clearsel
res siteflood2 polys zone = 'A' or zone = 'X500'
statistics siteflood2 polys # fld5002stat
sum area
end
&s fld5002area [show select fld5002stat info 1 item sum-area]
&s .fld5002 [calc [calc [calc %fld5002area% * 0.00000003587006] / %.area2mi%] * 100]
&if %.fld5002% lt 20 &then
  &s .fld5002sc 1
&else
  &if %.fld5002% ge 20 and %.fld5002% lt 30 &then
    &s .fld5002sc 2
  &else
    &if %.fld5002% ge 30 and %.fld5002% lt 40 &then
      &s .fld5002sc 3
    &else
      &if %.fld5002% ge 40 and %.fld5002% lt 50 &then
        &s .fld5002sc 4
      &else
        &s .fld5002sc 5

```

q

```
&end  
&else  
&do  
  &s .fld1004 -99  
  &s .fld1004sc 0  
  &s .fld1002 -99  
  &s .fld1002sc 0  
  &s .fld5004 -99  
  &s .fld5004sc 0  
  &s .fld5002 -99  
  &s .fld5002sc 0  
&end
```

```
&return
```

### **CRIALANDUSE.AML**

<<Remove title before running in GIS>>

```
project cover sitebuff4 site4bna %.progpath%files\r6alb2natalb
/*build site4bna polys
clean site4bna # .000000000001 .000000000001
project cover sitebuff2 site2bna %.progpath%files\r6alb2natalb
/*build site2bna polys
clean site2bna # .000000000001 .00000000000001
grid
mape site4bna
setwindow site4bna
site4clgr = f:\nlcd\region6
q
gridpoly site4clgr sitelumape
/*build sitelumape polys
clean sitelumape # .000000000001 .00000000000001

relate add
lu
%.progpath%\lucodes
info
grid-code
grid-code
ordered
ro
```

~

```
dissolve sitelumape sitelumed lu//wlh poly
clip sitelumed site4bna site4lud poly
/*build site4lud polys
clean site4lud # .0000000000001 .000000000000001
clip sitelumed site2bna site2lud poly
/*build site2lud polys
clean site2lud # .0000000000001 .000000000000001
```

```
additem sitelumape.pat sitelumape.pat arearat 8 8 n 6
additem sitelumape.pat sitelumape.pat lucode 8 8 n 6
additem sitelumape.pat sitelumape.pat agland 8 8 n 6
additem sitelumape.pat sitelumape.pat wetlands 8 8 n 6
```

```
clip sitelumape site4bna site4lu poly
/*build site4lu polys
clean site4lu # .0000000000000001 .0000000000000001
clip site4lu site2bna site2lu poly
/*build site2lu polys
clean site2lu # .0000000000000001 .0000000000000001
```

```
ap
calculate site4lu polys arearat = ( area * 0.0000003861003 ) / %.area4mi%
calculate site4lu polys lucode = arearat * lu/lurank
statistics site4lu polys # site4lustat
sum lucode
end
&s .wlhlur4 [show select site4lustat info 1 item sum-lucode]
&if %.wlhlur4% le 1 &then
  &s .wlhlur4sc = 1
&else
  &if %.wlhlur4% gt 1 and %.wlhlur4% le 2 &then
    &s .wlhlur4sc = 2
  &else
    &if %.wlhlur4% gt 2 and %.wlhlur4% le 3 &then
      &s .wlhlur4sc = 3
    &else
      &if %.wlhlur4% gt 3 and %.wlhlur4% le 4 &then
        &s .wlhlur4sc = 4
      &else
```

```

&s .wlhlur4sc = 5

calculate site2lu polys arearat = ( area * 0.0000003861003 ) / %.area2mi%
calculate site2lu polys lucode = arearat * lu/lurank
statistics site2lu polys # site2lustat
sum lucode
end
&s .wlhlur2 [show select site2lustat info 1 item sum-lucode]
&if %.wlhlur2% le 1 &then
  &s .wlhlur2sc = 1
&else
  &if %.wlhlur2% gt 1 and %.wlhlur2% le 2 &then
    &s .wlhlur2sc = 2
  &else
    &if %.wlhlur2% gt 2 and %.wlhlur2% le 3 &then
      &s .wlhlur2sc = 3
    &else
      &if %.wlhlur2% gt 3 and %.wlhlur2% le 4 &then
        &s .wlhlur2sc = 4
      &else
        &s .wlhlur2sc = 5

res site4lud polys wlh cn 'Y'
statistics site4lud polys # site4ludstat
sum area
sum perimeter
end
&s wlharea [show select site4ludstat info 1 item sum-area]
&s wlhperim [show select site4ludstat info 1 item sum-perimeter]
&s .wlhapr4 [calc %wlharea% / %wlhperim%]
&if %.wlhapr4% lt 1 &then
  &s .wlhapr4sc = 1
&else
  &if %.wlhapr4% ge 1 and %.wlhapr4% lt 2 &then
    &s .wlhapr4sc = 2
  &else
    &if %.wlhapr4% ge 2 and %.wlhapr4% lt 3 &then
      &s .wlhapr4sc = 3
    &else
      &if %.wlhapr4% ge 3 and %.wlhapr4% lt 4 &then
        &s .wlhapr4sc = 4

```

```

&else
  &s .wlhapr4sc = 5

&s .wlhper4 [calc [calc [calc %wlharea% * 0.0000003861003] / %.area4mi%] * 100]
&if %.wlhper4% lt 20 &then
  &s .wlhper4sc = 1
&else
  &if %.wlhper4% ge 20 and %.wlhper4% lt 30 &then
    &s .wlhper4sc = 2
  &else
    &if %.wlhper4% ge 30 and %.wlhper4% lt 40 &then
      &s .wlhper4sc = 3
    &else
      &if %.wlhper4% ge 40 and %.wlhper4% lt 50 &then
        &s .wlhper4sc = 4
      &else
        &s .wlhper4sc = 5

res site2lud polys wlh cn 'Y'
statistics site2lud polys # site2ludstat
sum area
sum perimeter
end
&s wlharea [show select site2ludstat info 1 item sum-area]
&s wlhperim [show select site2ludstat info 1 item sum-perimeter]
&s .wlhapr2 [calc %wlharea% / %wlhperim%]
&if %.wlhapr2% lt 1 &then
  &s .wlhapr2sc = 1
&else
  &if %.wlhapr2% ge 1 and %.wlhapr2% lt 2 &then
    &s .wlhapr2sc = 2
  &else
    &if %.wlhapr2% ge 2 and %.wlhapr2% lt 3 &then
      &s .wlhapr2sc = 3
    &else
      &if %.wlhapr2% ge 3 and %.wlhapr2% lt 4 &then
        &s .wlhapr2sc = 4
      &else
        &s .wlhapr2sc = 5

&s .wlhper2 [calc [calc [calc %wlharea% * 0.0000003861003] / %.area2mi%] * 100]

```

```

&if %.wlhper2% lt 20 &then
  &s .wlhper2sc = 1
&else
  &if %.wlhper2% ge 20 and %.wlhper2% lt 30 &then
    &s .wlhper2sc = 2
  &else
    &if %.wlhper2% ge 30 and %.wlhper2% lt 40 &then
      &s .wlhper2sc = 3
    &else
      &if %.wlhper2% ge 40 and %.wlhper2% lt 50 &then
        &s .wlhper2sc = 4
      &else
        &s .wlhper2sc = 5

*****Agriculture lands
clearsel
res site4lu polys lu//grid-code ge 81 and lu//grid-code le 85
asel site4lu polys lu//grid-code = 61
statistics site4lu polys # site4agstat
sum area
end
&s agarea [show select site4agstat info 1 item sum-area]
&s .agper4 [calc [calc [calc %agarea% * 0.0000003861003] / %.area4mi%] * 100]
&if %.agper4% lt 20 &then
  &s .agper4sc = 1
&else
  &if %.agper4% ge 20 and %.agper4% lt 30 &then
    &s .agper4sc = 2
  &else
    &if %.agper4% ge 30 and %.agper4% lt 40 &then
      &s .agper4sc = 3
    &else
      &if %.agper4% ge 40 and %.agper4% lt 50 &then
        &s .agper4sc = 4
      &else
        &s .agper4sc = 5

clearsel
res site2lu polys lu//grid-code ge 81 and lu//grid-code le 85
asel site2lu polys lu//grid-code = 61
statistics site2lu polys # site2agstat

```

```

sum area
end
&s agarea [show select site2agstat info 1 item sum-area]
&s .agper2 [calc [calc [calc %agarea% * 0.0000003861003] / %.area2mi%] * 100]
&if %.agper2% lt 20 &then
  &s .agper2sc = 1
&else
  &if %.agper2% ge 20 and %.agper2% lt 30 &then
    &s .agper2sc = 2
  &else
    &if %.agper2% ge 30 and %.agper2% lt 40 &then
      &s .agper2sc = 3
    &else
      &if %.agper2% ge 40 and %.agper2% lt 50 &then
        &s .agper2sc = 4
      &else
        &s .agper2sc = 5

*****Wetlands
clearsel
res site4lu polys lu//grid-code ge 91 and lu//grid-code le 92
statistics site4lu polys # site4wetstat
sum area
end
&s wetarea [show select site4wetstat info 1 item sum-area]
&s .wetper4 [calc [calc [%wetarea% * 0.0000003861003] / %.area4mi%] * 100]
&if %.wetper4% lt 20 &then
  &s .wetper4sc = 1
&else
  &if %.wetper4% ge 20 and %.wetper4% lt 30 &then
    &s .wetper4sc = 2
  &else
    &if %.wetper4% ge 30 and %.wetper4% lt 40 &then
      &s .wetper4sc = 3
    &else
      &if %.wetper4% ge 40 and %.wetper4% lt 50 &then
        &s .wetper4sc = 4
      &else
        &s .wetper4sc = 5

clearsel

```

```

res site2lu polys lu//grid-code ge 91 and lu//grid-code le 92
statistics site2lu polys # site2wetstat
sum area
end
&s wetarea [show select site2wetstat info 1 item sum-area]
&s .wetper2 [calc [calc [calc %wetarea% * 0.0000003861003] / %.area2mi%] * 100]
&if %.wetper2% lt 20 &then
  &s .wetper2sc = 1
&else
  &if %.wetper2% ge 20 and %.wetper2% lt 30 &then
    &s .wetper2sc = 2
  &else
    &if %.wetper2% ge 30 and %.wetper2% lt 40 &then
      &s .wetper2sc = 3
    &else
      &if %.wetper2% ge 40 and %.wetper2% lt 50 &then
        &s .wetper2sc = 4
      &else
        &s .wetper2sc = 5

q
&return

```

### **CRIALOADTRACKER.AML**

<<Remove title before running in GIS>>

```

&data arc info
ARC
SEL TRACKCRIA
ADD
%.datename%
%.st%
%.coname%
%.cocode%
%.reqname%
%.mcode%
%.siteid%
%.namesite%
%.x%
%.y%

```

%logdg%  
%logmn%  
%logsc%  
%latdg%  
%latmn%  
%latsc%  
%radius1%  
%radius2%  
%swuse%  
%swuserr%  
%sto%  
%stor%  
%rain%  
%rainr%  
%uwa%  
%aveflow%  
%aveflowr%  
%aqgeo%  
%dswsc%  
%nonatt%  
%ssaqu%  
%wtaq4%  
%wtaq4sc%  
%wtpy4%  
%wtpy4sc%  
%perm4%  
%gwp4%  
%wlhper4%  
%wlhper4sc%  
%wlhlur4%  
%wlhlur4sc%  
%wlhapr4%  
%wlhapr4sc%  
%agper4%  
%agper4sc%  
%wetper4%  
%wetper4sc%  
%fld1004%  
%fld1004sc%  
%fld5004%  
%fld5004sc%

% .rdsq4%  
% .rdsq4sc%  
% .wtch4%  
% .wtch4sc%  
% .othersite4%  
% .othfac4%  
% .nohsdeg4%  
% .nohsdeg4sc%  
% .edusc4%  
% .poor4%  
% .poor4sc%  
% .minority4%  
% .minority4sc%  
% .kids4%  
% .kids4sc%  
% .older4%  
% .older4sc%  
% .babes4%  
% .babes4sc%  
% .unemploy4%  
% .unemploy4sc%  
% .popdens4%  
% .popdens4sc%  
% .newpop4%  
% .engabil4%  
% .engabil4sc%  
% .lingiso4%  
% .lingiso4sc%  
% .forborn4%  
% .forborn4sc%  
% .hseage4%  
% .airlbs4%  
% .airlbssc4%  
% .wtrlbs4%  
% .wtrlbssc4%  
% .landlbs4%  
% .landlbssc4%  
% .airdi4%  
% .airdisc4%  
% .wtrdi4%  
% .wtrdisc4%

% .wtaq2%  
% .wtaq2sc%  
% .wtpy2%  
% .wtpy2sc%  
% .perm2%  
% .gwp2%  
% .wlhper2%  
% .wlhper2sc%  
% .wlhlur2%  
% .wlhlur2sc%  
% .wlhapr2%  
% .wlhapr2sc%  
% .agper2%  
% .agper2sc%  
% .wetper2%  
% .wetper2sc%  
% .fld1002%  
% .fld1002sc%  
% .fld5002%  
% .fld5002sc%  
% .rdsq2%  
% .rdsq2sc%  
% .wtch2%  
% .wtch2sc%  
% .othersite2%  
% .othfac2%  
% .nohsdeg2%  
% .nohsdeg2sc%  
% .edusc2%  
% .poor2%  
% .poor2sc%  
% .minority2%  
% .minority2sc%  
% .kids2%  
% .kids2sc%  
% .older2%  
% .older2sc%  
% .babes2%  
% .babes2sc%  
% .unemploy2%  
% .unemploy2sc%

```

%.popdens2%
%.popdens2sc%
%.newpop2%
%.engabil2%
%.engabil2sc%
%.lingiso2%
%.lingiso2sc%
%.forborn2%
%.forborn2sc%
%.hseage2%
%.airlbs2%
%.airlbssc2%
%.wtrlbs2%
%.wtrlbssc2%
%.landlbs2%
%.landlbssc2%
%.airdi2%
%.airdisc2%
%.wtrdi2%
%.wtrdisc2%
~
Q STOP
&end

```

### **CRIAMAIN.AML**

<<Remove title before running in GIS>>

```

&arg loctype
&if [null %loctype%] &then
  &return &warning Usage: CRIAMAIN < coord | cover >

&terminal 9999
&menupath \\r6gisnt1\share1\acs\jdaniels\criaprogtest
&amlpath \\r6gisnt1\share1\acs\jdaniels\criaprogtest
&s .progpath \\r6gisnt1\share1\acs\jdaniels\criaprogtest\

&if %loctype% = coord &then
  &menu coord.menu &position &cc &stripe coord.menu
&if %loctype% = cover &then
  &menu cover.menu &position &cc &stripe cover.menu

```

```

&s gridlic = [before [after [show product grid] ,] ,]
&if %gridlic% le 1 &then
    product grid reserve
&else
    &do
        &popup %.progpath%files\nolicenseavailable.txt
        &s .letsgo = Z
    &end

&if %.letsgo% = Y &then
    &do
        &if %loctype% = coord &then
            &call PROJECTFILE
        &if %loctype% = cover &then
            &call GETCOVERXY
        &call ERRORCHECK
        &if %.letsgo% = Y &then
            &call MAINWORK
    &end

&return

&routine MAINWORK
&if %loctype% = coord &then
    &call GENERATEPTCOVER
&if %loctype% = cover &then
    &call POLYBUFF
    &call OVERLAPSTATE
    &r criawatershed
    &r criaaquí
    &r criaenviro
    &r criaclip
    &r criadistance
    &r criards
    &r criawtrquan
    &r criawtrchan
    &r criawtrsurfa
    &r criaflood
    &r criastatsgo
    &r crialanduse
product grid available

```

```

&r criacensus
&r criatri
&r crialoadtracker
&r criadelete
&dv *
&dv .*

&return

&routine PROJECTFILE
&s .logdg = 0 - [abs %.logdg%]
&s .long_lat [quote %.logdg% %.logmn% %.logsc%  %.latdg% %.latmn% %.latsc%]
&s .daytime [date -vfull]
&s .datename [date -ftag]
&s .llunit = [open lldms.txt .openll -write]
&if [write %.llunit% %.long_lat%] = 0 &then
  &do
    &type
    &type LAT/LONG IS BEING PROJECTED .....
  &end
&else
  &type THIS IS FAILING %.llunit%  %.openll%
&s closefile = [close %.llunit%]
/*projects location from degrees-minutes-seconds to albers feet.
project file lldms.txt llalb.txt %.progpath%dms2alb
&s .llunit = [open llalb.txt .openll -read]
&s readline = [read %.llunit% readst]
&s .x = [unquote [substr %readline% 7 21]]
&s .y = [unquote [substr %readline% 28 20]]
&s closefile = [close %.llunit%]
&if [exists lldms.txt -file] &then
  &s erase [delete lldms.txt -file]
&if [exists llalb.prj -file] &then
  &s erase [delete llalb.prj -file]
&if [exists llalb.txt -file] &then
  &s erase [delete llalb.txt -file]
&return

&routine GETCOVERXY
createlabels %.covername%
centroidlabels %.covername% inside

```

```

addxy %.covername%
ap
res %.covername% polys %.covername%-id = 1
&s .x [show select %.covername% poly 1 item x-coord]
&s .y [show select %.covername% poly 1 item y-coord]
q
&return

&routine ERRORCHECK
&if %.radius1% > %.radius2% &then
  &s .letsgo = Y
&else
  &do
    &type .....
    &type .
    &type . The outer buffer is less than or equal to the .
    &type . inner buffer. It should be larger than the inner .
    &type . buffer. Press "Enter" to restart.
    &type .....
    &s .letsgo = Z
    &pause 'Press <Enter> to continue'
  &end

&if %.letsgo% = Y &then
  &do
    ap
    coo keyboard
    searchtolerance .00001
    mape \\r6gisnt1\share1\common\states
    res \\r6gisnt1\share1\common\states polys one %.x% %.y%
    &s .st [show select \\r6gisnt1\share1\common\states poly 1 item st]
    &s error = [before [show select \\r6gisnt1\share1\common\states polys] ,]
    res \\r6gisnt1\share1\common\r6cos polys one %.x% %.y%
    &s .cocode [show select \\r6gisnt1\share1\common\r6cos poly 1 item tile-name]
    &s .flooddata [exists \\r6gisnt1\share1\%.st%\tgr92\%.cocode%\flood -cover]
    coo cursor
    q
    &if %error% = 0 &then
      &do
        &type .....
        &type .

```

```

&type . The longitude and latitude entered does not fall .
&type . within the boundaries of Region 6.
&type . Verify that the longitude/latitude were entered .
&type . correctly. If the data is correct as entered, then .
&type . the site location will have to be verified. Press .
&type . "Enter" to restart.
&type ..... .
&s .letsgo = Z
&pause 'Press <Enter> to continue'
&end
&else
&do
&s .errorcheck = 0
&sys cls
&type ..... .
&type .
&type . Site processing will now start..... .
&type ..... .
&type
&pause &seconds 5
ap
coo keyboard
searchtolerance .00001
mape \\r6gisnt1\share1\common\r6cos
res \\r6gisnt1\share1\common\r6cos polys one %.x% %.y%
&s .cocode [show select \\r6gisnt1\share1\common\r6cos poly 1 item tile-name]
&s .flooddata [exists \\r6gisnt1\share1\%.st%\tgr92\%.cocode%\flood -cover]
coo cursor
q
&end
&end
&return

&routine GENERATEPTCOVER
&s .rad4 = [calc %.radius1% * 5280]
&s .rad2 = [calc %.radius2% * 5280]
generate sitept
point
1%.x%,%.y%
end
quit

```

```

build sitept points
generate sitebuff4
circles
1,%x%,%y%,%.rad4%
end
quit
build sitebuff4 polys
generate sitebuff2
circles
1,%x%,%y%,%.rad2%
end
quit
build sitebuff2 polys
ap
res sitebuff4 polys sitebuff4-id = 1
&s .area4mi [calc [show select sitebuff4 poly 1 item area] * 0.00000003587006]
res sitebuff2 polys sitebuff2-id = 1
&s .area2mi [calc [show select sitebuff2 poly 1 item area] * 0.00000003587006]
q
&return

```

#### &routine POLYBUFF

```

&s .logdg 0
&s .logmn 0
&s .logsc 0
&s .latdg 0
&s .latmn 0
&s .latsc 0
&s .daytime [date -vfull]
&s .datename [date -ftag]

```

```

&s .rad4 = [calc %.radius1% * 5280]
&s .rad2 = [calc %.radius2% * 5280]

```

```

buffer %.covername% sitebuff4 # # %.rad4% # poly /**** outer buffer
&if %.radius2% = .001 &then
  copy %.covername% sitebuff2
&else
  buffer %.covername% sitebuff2 # # %.rad2% # poly /**** inner buffer

```

ap

```

res sitebuff4 polys sitebuff4-id = 1
&s .area4mi [calc [show select sitebuff4 poly 1 item area] * 0.00000003587006]
res sitebuff2 polys sitebuff2-id = 1
&s .area2mi [calc [show select sitebuff2 poly 1 item area] * 0.00000003587006]
q
&return

&routine OVERLAPSTATE
ap
res \\r6gisnt1\\share1\\common\\states polys overlap sitebuff4 polys
&s .statenum [before [show select \\r6gisnt1\\share1\\common\\states polys] ,]
&s xnum = 1
&do &until %xnum% > %.statenum%
  &s .st%xnum% [show select \\r6gisnt1\\share1\\common\\states poly %xnum% item st]
  &s xnum = %xnum% + 1
&end
q
&return

```

### **CRIARDS.AML**

<<Remove title before running in GIS>>

```

ap
statistics siterd4 arcs # rd4stat
sum length
end
&s rd4length [show select rd4stat info 1 item sum-length]
&s .rdsq4 [calc [calc %rd4length% / 5280] / %.area4mi%]
&if %.rdsq4% lt 1.20 &then
  &s .rdsq4sc 1
&else
  &if %.rdsq4% ge 1.20 and %.rdsq4% lt 1.80 &then
    &s .rdsq4sc 2
  &else
    &if %.rdsq4% ge 1.80 and %.rdsq4% lt 2.20 &then
      &s .rdsq4sc 3
    &else
      &if %.rdsq4% ge 2.20 and %.rdsq4% lt 2.60 &then
        &s .rdsq4sc 4
      &else

```

```

&s .rdsq4sc 5

statistics siterd2 arcs # rd2stat
sum length
end
&s rd2length [show select rd2stat info 1 item sum-length]
&s .rdsq2 [calc [calc %rd2length% / 5280] / %.area2mi%]
&if %.rdsq2% lt 1.20 &then
  &s .rdsq2sc 1
&else
  &if %.rdsq2% ge 1.20 and %.rdsq2% lt 1.80 &then
    &s .rdsq2sc 2
  &else
    &if %.rdsq2% ge 1.80 and %.rdsq2% lt 2.20 &then
      &s .rdsq2sc 3
    &else
      &if %.rdsq2% ge 2.20 and %.rdsq2% lt 2.60 &then
        &s .rdsq2sc 4
      &else
        &s .rdsq2sc 5

q
&return

```

### **CRIASTATSGO.AML**

<<Remove title before running in GIS>>

```

&do rad &list 2 4
additem stats%rad%.pat stats%rad%.pat arearat 8 8 n 6
additem stats%rad%.pat stats%rad%.pat gwpmmod 8 8 n 6
additem stats%rad%.pat stats%rad%.pat spmmod 8 8 n 6
&end
ap
relate add
soils
%.progpath%soils
info
muid
muid
ordered

```

```

ro
~
&do rad &list 2 4
  res stats%rad% polys muid nc 'W'
  statistics stats%rad% polys # soil%rad%statsarea
  sum area
  end
  &s studyarea [show select soil%rad%statsarea info 1 item sum-area]
  &s studyarea [calc %studyarea% * 0.00000003587006]
  calculate stats%rad% polys arearat = ( area * 0.00000003587006 ) / %studyarea%
  res stats%rad% polys soils//gwprob > 0
  calculate stats%rad% polys gwpmmod = soils//gwprob * arearat
  nsel stats%rad% polys
  calculate stats%rad% polys gwpmmod = 1 * arearat
  clearsel
  res stats%rad% polys soils//perm > 0
  calculate stats%rad% polys spmmod = soils//perm * arearat
  nsel stats%rad% polys
  calculate stats%rad% polys spmmod = 1 * arearat
  clearsel
  res stats%rad% polys muid nc 'W'
  statistics stats%rad% polys # soil%rad%stats
  sum gwpmmod
  sum spmmod
  end
  &s .gwp%rad% [show select soil%rad%stats info 1 item sum-gwpmmod]
  &s .perm%rad% [show select soil%rad%stats info 1 item sum-spmmod]
&end

q
&return

```

## **CRIATRI.AML**

<<Remove title before running in GIS>>

```

ap
mape sitebuff4

relate add
tri

```

```

%.progpath%r6tri98rel
info
tri_id
tri_id
ordered
ro
~

&do rad &list 4 2
res %.progpath%r6tri98 points mape
res %.progpath%r6tri98 points overlap sitebuff%rad% polys
statistics %.progpath%r6tri98 points # tristat
sum tri//air
sum tri//water
sum tri//diair
sum tri//diwtr
sum tri//othland
end

&s airl [show select tristat info 1 item sum-air]
&s wtrl [show select tristat info 1 item sum-water]
&s aird [show select tristat info 1 item sum-diair]
&s wtrd [show select tristat info 1 item sum-diwr]
&s landl [show select tristat info 1 item sum-othland]

&do type &list airlbs wtrlbs airdi wtrdi landlbs
&if %type% = airlbs &then
  &do
    &s amt = %airl%
    &s .airlbs%rad% = %airl%
  &end
  &if %type% = wtrlbs &then
    &do
      &s amt = %wtrl%
      &s .wtrlbs%rad% = %wtrl%
    &end
    &if %type% = airdi &then
      &do
        &s amt = %aird%
        &s .airdi%rad% = %aird%
      &end

```

```

&if %type% = wtrdi &then
  &do
    &s amt = %wtrd%
    &s .wtrdi%rad% = %wtrd%
  &end
&if %type% = landlbs &then
  &do
    &s amt = %landl%
    &s .landlbs%rad% = %landl%
  &end

&if %amt% le 300000 &then
  &s .%type%sc%rad% 1
&else
  &if %amt% gt 300000 and %amt% le 1000000 &then
    &s .%type%sc%rad% 2
  &else
    &if %amt% gt 1000000 and %amt% le 2000000 &then
      &s .%type%sc%rad% 3
    &else
      &if %amt% gt 2000000 and %amt% le 5000000 &then
        &s .%type%sc%rad% 4
      &else
        &s .%type%sc%rad% 5

```

```

clearsel
&if [exist tristat -info] &then
  &s erase [delete tristat -info]
&end
&end
q
&return

```

## CRIA WATERSHED.AML

<<Remove title before running in GIS>>

```

ap
coo keyboard
mape sitebuff4
res \\r6gisnt1\share1\common\r6cos polys one %.x% %.y%

```

```

&s .coname [quote [show select \\r6gisnt1\share1\common\r6cos poly 1 item county]]
&s .cocode [show select \\r6gisnt1\share1\common\r6cos poly 1 item stcofips]
res %.progpath%nonattain info stcofips cn [quote %.cocode%]
&s .nonatt [show select %.progpath%nonattain info 1 item nonattain]
res \\r6gisnt1\share1\common\hydro\r6clip polys one %.x% %.y%
&s .hucode [show select \\r6gisnt1\share1\common\hydro\r6clip poly 1 item huc8]
res %.progpath%hucscores info huc8 cn [quote %.hucode%]
&s .swuse [show select %.progpath%hucscores info 1 item swuse]
&s .swuserr [show select %.progpath%hucscores info 1 item swuserr]
&s .sto [show select %.progpath%hucscores info 1 item sto]
&s .stor [show select %.progpath%hucscores info 1 item stor]
&s .rain [show select %.progpath%hucscores info 1 item rainfall]
&s .rainr [show select %.progpath%hucscores info 1 item rainr]
&s .uwa [show select %.progpath%hucscores info 1 item uwa]
&s .aveflow [show select %.progpath%hucscores info 1 item aveflow]
&s .aveflowr [show select %.progpath%hucscores info 1 item aveflow_r]
&s .aqgeo [show select %.progpath%hucscores info 1 item aqgeo]
&s .hucname [show select %.progpath%hucscores info 1 item hucname]
q
&return

```

### CRIAWTRCHAN.AML

<<Remove title before running in GIS>>

```

ap
res sitewtar4 arcs cfcc cn 'H20' or cfcc cn 'H21' or cfcc cn 'H22'
statistics sitewtar4 arcs # wtarch4stat
sum length
end
&s wt4length [show select wtarch4stat info 1 item sum-length]
&s .wtch4 [calc [calc %wt4length% / 5280] / %.area4mi%]
&if %.wtch4% lt 0.917 &then
    &s .wtch4sc 1
&else
    &if %.wtch4% ge 0.917 and %.wtch4% lt 1.15 &then
        &s .wtch4sc 2
    &else
        &if %.wtch4% ge 1.15 and %.wtch4% lt 1.43 &then
            &s .wtch4sc 3
        &else

```

```

&if %.wtch4% ge 1.43 and %.wtch4% lt 1.70 &then
  &s .wtch4sc 4
&else
  &s .wtch4sc 5

res sitewtar2 arcs cfcc cn 'H20' or cfcc cn 'H21' or cfcc cn 'H22'
statistics sitewtar2 arcs # wtarch2stat
sum length
end
&s wt2length [show select wtarch2stat info 1 item sum-length]
&s .wtch2 [calc [calc %wt2length% / 5280] / %.area2mi%]
&if %.wtch2% lt 0.917 &then
  &s .wtch2sc 1
&else
  &if %.wtch2% ge 0.917 and %.wtch2% lt 1.15 &then
    &s .wtch2sc 2
  &else
    &if %.wtch2% ge 1.15 and %.wtch2% lt 1.43 &then
      &s .wtch2sc 3
    &else
      &if %.wtch2% ge 1.43 and %.wtch2% lt 1.70 &then
        &s .wtch2sc 4
      &else
        &s .wtch2sc 5

```

```

q
&return

```

### **CRIAWTRQUAN.AML**

<<Remove title before running in GIS>>

```

ap
statistics sitewtar4 arcs # wtar4stat
sum length
end
&s wt4length [show select wtar4stat info 1 item sum-length]
&s .wtaq4 [calc [calc %wt4length% / 5280] / %.area4mi%]
&if %.wtaq4% lt 0.917 &then
  &s .wtaq4sc 1
&else

```

```

&if %.wtaq4% ge 0.917 and %.wtaq4% lt 1.15 &then
  &s .wtaq4sc 2
&else
  &if %.wtaq4% ge 1.15 and %.wtaq4% lt 1.43 &then
    &s .wtaq4sc 3
  &else
    &if %.wtaq4% ge 1.43 and %.wtaq4% lt 1.70 &then
      &s .wtaq4sc 4
    &else
      &s .wtaq4sc 5

statistics sitewtar2 arcs # wtar2stat
sum length
end
&s wt2length [show select wtar2stat info 1 item sum-length]
&s .wtaq2 [calc [calc %wt2length% / 5280] / %.area2mi%]
&if %.wtaq2% lt 0.917 &then
  &s .wtaq2sc 1
&else
  &if %.wtaq2% ge 0.917 and %.wtaq2% lt 1.15 &then
    &s .wtaq2sc 2
  &else
    &if %.wtaq2% ge 1.15 and %.wtaq2% lt 1.43 &then
      &s .wtaq2sc 3
    &else
      &if %.wtaq2% ge 1.43 and %.wtaq2% lt 1.70 &then
        &s .wtaq2sc 4
      &else
        &s .wtaq2sc 5

q
&return

```

**CRIA WTRSURFA.AML**  
 <<Remove title before running in GIS>>

```

ap
res sitewtpy4 polys wid = 99
statistics sitewtpy4 polys # wtpy4stat

```

```

sum area
end
&s wt4area [show select wtpy4stat info 1 item sum-area]
&s .wtpy4 [calc [calc [calc %wt4area% * 0.00000003587006] / %.area4mi%] * 100]
&if %.wtpy4% lt 10 &then
  &s .wtpy4sc 1
&else
  &if %.wtpy4% ge 10 and %.wtpy4% lt 20 &then
    &s .wtpy4sc 2
  &else
    &if %.wtpy4% ge 20 and %.wtpy4% lt 30 &then
      &s .wtpy4sc 3
    &else
      &if %.wtpy4% ge 30 and %.wtpy4% lt 40 &then
        &s .wtpy4sc 4
      &else
        &s .wtpy4sc 5

res sitewtpy2 polys wid = 99
statistics sitewtpy2 polys # wtpy2stat
sum area
end
&s wt2area [show select wtpy2stat info 1 item sum-area]
&s .wtpy2 [calc [calc [calc %wt2area% * 0.00000003587006] / %.area2mi%] * 100]
&if %.wtpy2% lt 10 &then
  &s .wtpy2sc 1
&else
  &if %.wtpy2% ge 10 and %.wtpy2% lt 20 &then
    &s .wtpy2sc 2
  &else
    &if %.wtpy2% ge 20 and %.wtpy2% lt 30 &then
      &s .wtpy2sc 3
    &else
      &if %.wtpy2% ge 30 and %.wtpy2% lt 40 &then
        &s .wtpy2sc 4
      &else
        &s .wtpy2sc 5

q
&return

```